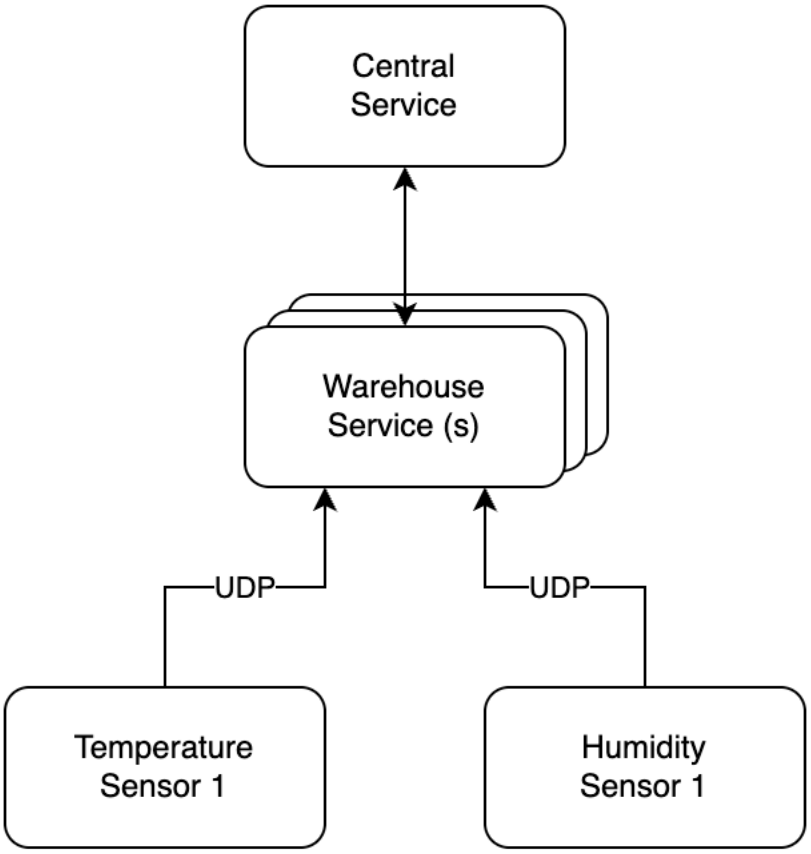
System Design Document

Overview:

There is a warehouse equipped with various types of sensors that monitor environmental conditions. These sensors provide measurements such as current temperature and humidity, which are transmitted via UDP. The warehouse service interacts with all these sensors and automatically publishes the measurements to a central monitoring service. This service oversees multiple warehouses and activates an alarm if temperature or humidity readings exceed configured thresholds.



System Design:

Your task is to design a reactive system that includes:

- Warehouse Service: Collects data from various sensors and sends it to the Central Monitoring Service.
- Central Monitoring Service: Configured with thresholds for temperature and humidity. Raises an alarm when sensor measurements cross these thresholds. The alarm message should be visible in the logs/console.

Specifications:

- Sensor Types: Temperature, Humidity
- Communication: Measurements are sent via UDP.
- Central Service Features: Threshold monitoring, alarm activation.

Technical Requirements:

- Temperature Sensor:
  - UDP Port: 3344
  - Measurement Syntax: sensor_id=t1; value=30
  - Threshold: 35°C
- Humidity Sensor:
  - UDP Port: 3355
  - Measurement Syntax: sensor_id=h1; value=40
  - Threshold: 50%

Development Expectations:

- No user interactions are required.
- A simple command line/console output is sufficient; no GUI is needed.
- Consider adding test coverage, if possible.
- Sensors can be simulated using any utility capable of sending UDP messages, such as netcat.
- Usage of message broker is added advantage.

Submission Guidelines:

- Complete the solution within 24 hours.
- Do NOT mention BeamTrail in your solution.
- You may use Kotlin or Java for implementation.
- You can upload the solution on GitHub and share the link.